

National Weather Service Annual Study

2012 Final Presentation

Agenda

- Introduction
- Program Overview
- Survey Methodology
- Key Findings
- Respondent Profile
- Summary Results
- Core Survey
- National Hazardous Weather Services – Optional Section
- National Aviation Weather Services – Optional Section
- National Marine Weather Services – Optional Section
- CSI by Key Segments
- Recommendations

Program Overview

Key Contacts

- > NWS: Doug Young, Sal Romano
- > CFI Group: Tim Crowley, Paul Klimecki

Project Background

- > CFI Group has been working with the National Weather Service since 2002
- > Multiple studies have been conducted, including event driven studies, various user groups, and partner studies

Program Objective

- > Help NWS achieve its strategic and tactical goals by providing:
 - Feedback on NWS products, services and overall customer satisfaction
 - Recommendations for future focus

Survey Methodology

Data Collection

- Survey link was made available on NWS web pages September 21 – October 22
- A total of 24,272 surveys were completed and used for analysis

Survey Design

- The survey measured satisfaction with general NWS products and services
- The survey further measured satisfaction with 3 (optional) specific service areas:
 - Hazardous Weather Services
 - Aviation Weather Services
 - Marine Weather Services

Key Findings

At 84, NWS CSI is solid and much higher than most benchmarks

- 17 points higher than the Federal Government ACSI
- Consistent with 2011

Majority of respondents are private citizens

- Most are accessing information for personal and recreational use
- Almost all use NWS Web Sources to get weather info – many use local/cable TV and over a third mobile devices (rising year on year)

Dissemination Services remains a strongly rated, high-impact driver of customer satisfaction

- Ease of locating information on the refreshed site is rated relatively lower than other Dissemination Services attributes

Customers have less confidence in longer-term Routine Temperature and Precipitation Forecasts

Hazardous Weather Warnings are rated well

- Not too surprisingly ease of understanding and timeliness receive higher scores than accuracy across hazardous services

User support staff continues to be a strength for NWS

Respondent Profile



General Profile of NWS Respondent

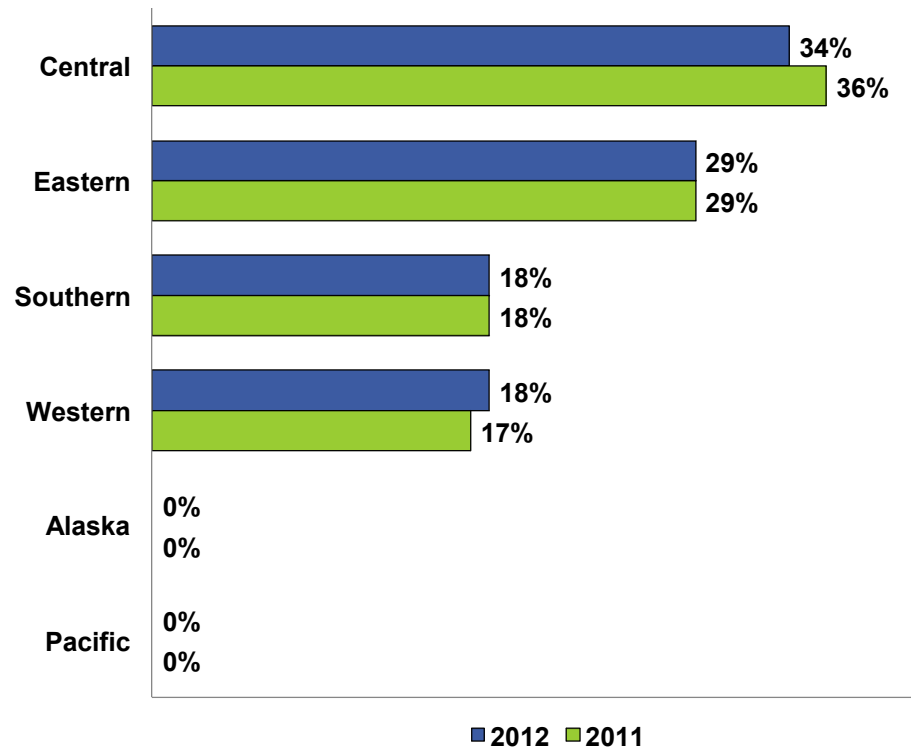
- ☐ Private citizen who resides in the US – primarily in the Central and Eastern Regions.
- ☐ Uses information for personal and recreational use.
- ☐ Is between the ages of 45 and 64, male, identifies himself as white and has a post high school degree.
- ☐ Currently uses NWS Web Sources, Local or cable TV, NOAA Weather Radio, Mobile devices, Non-NWS Web Sources and Commercial radio to gather weather information – most often uses NOAA forecasts, watches, warnings, alerts and also Observational data.
- ☐ Future plans include the use of Computers, Mobile devices, and NOAA Weather Radio All-Hazards to get NWS information.
- ☐ Typically uses Min/Max temperature forecasts, chance of precipitation forecasts, Wind forecasts and 1 to 4 week National Outlooks.
- ☐ Has a hazardous weather safety plan (may or may not have a hazardous weather emergency preparedness kit).
- ☐ Generally not using information to make job related decisions.

Almost All Respondents in US; Predominantly in Central and Eastern Region

Nearly all respondents identified themselves as living or working in the United States.

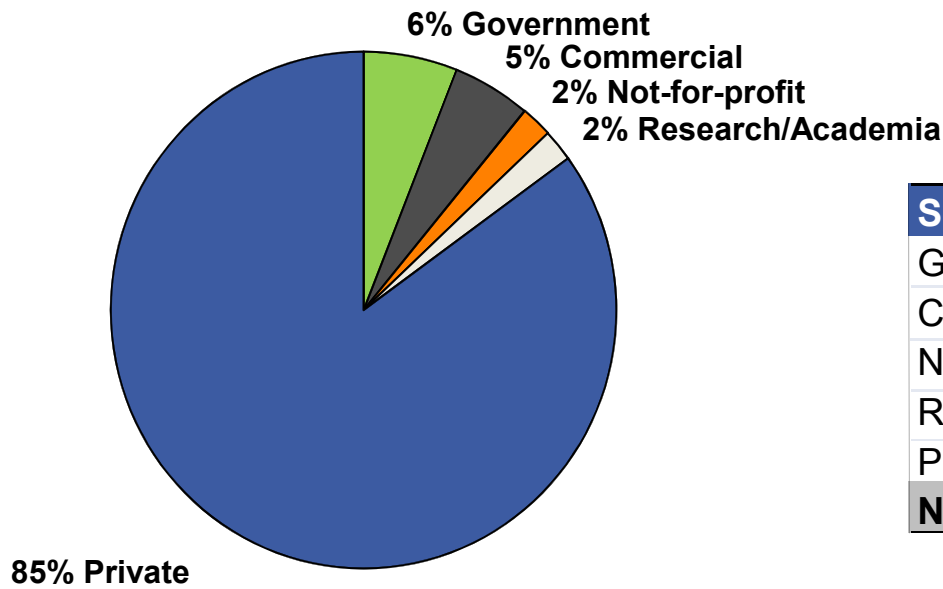
Central Region remains the most highly represented region in 2012 among survey respondents (34%). Eastern, Southern and Western Regions make up the majority of the remaining respondents (29%, 18% and 18%, respectively).

	2012	
	Percent	Frequency
Country you live or work in		
United States	99%	24,115
Other	1%	157
Number of Respondents	24,272	



Majority of respondents are from the Private Sector

The vast majority of respondents (85%) indicated they were private citizens. Local government was the next largest sector selected, at 6%, while Commercial, Not-for-profit , and Research/Academia debuted at 5%, 2%, and 2% respectively.



Sector	Frequency
Government	1,492
Commercial	1,135
Not-for-profit	404
Research/Academia	480
Private	20,604
Number of Respondents	24,115

NWS Info mostly for personal use; Aviation mostly private

Sixty percent of respondents are accessing NWS information for personal use. Recreation (13%), agriculture (5%) and emergency response / public safety continue to be other relatively popular uses of NWS information among survey respondents.

For those respondents using NWS information for Aviation purposes, the majority are operating private aircrafts (55% for pleasure, 19% for business).

	2010	2011	2012
Primary use of NWS information			
Agriculture	4%	5%	5%
Aviation	1%	1%	1%
Amateur Radio	0%	1%	1%
Broadcast/Print Media	0%	1%	1%
Commodities Markets	0%	0%	0%
Consulting Services	1%	0%	0%
Education	1%	1%	1%
Emergency Response/Public Safety	9%	3%	5%
Energy/Utilities	0%	1%	1%
Environment Rsrc Mgt	1%	1%	1%
Fire Weather	0%	0%	1%
Health Care Services	0%	0%	0%
Internet Provider	0%	0%	0%
Marine	0%	0%	1%
NWS Data Provider	10%	3%	3%
Personal	60%	64%	60%
Recreation	8%	12%	13%
Research	1%	1%	1%
Other	4%	6%	6%
Number of Respondents	13,648	32,572	24,272

	2012
Type of Aviation	
Dispatcher	6%
Comm Freight	4%
Comm Passenger	15%
Private Business	19%
Private Pleasure	55%
Number of Respondents	359

As in previous years, the majority of respondents primarily used information for personal use.

Respondents are primarily using NWS Web Sources, NOAA Weather Radio and Local or Cable TV to get information

NWS Web Sources remains the top weather information source among respondents, while Mobile devices are on the rise. Local or cable TV, NOAA Weather Radio/All Hazards, and non-NWS Web Sources are also frequently used to obtain weather, water and climate information.

NWS Web Sources continue to be most used to receive information.



	2010	2011	2012
Information sources			
NWS Web Sources	97%	95%	93%
Non-NWS Web Sources	42%	31%	33%
Mobile devices	32%	32%	37%
Social Media	--	9%	11%
Email Alerts	--	--	16%
NOAA Weather Radio/All Hazards	59%	42%	41%
NOAA Weather Wire	6%	6%	5%
Family of Services (FOS)	5%	5%	4%
Emerg Mgrs Weather Info Net	7%	4%	4%
NOAAPort	4%	6%	5%
File transfer services	--	--	5%
Direct interaction with NWS staff	--	--	5%
World Area Forecast System	2%	2%	2%
DUATS	2%	2%	2%
Flight Services	5%	4%	5%
Local or cable TV	65%	52%	52%
Commercial Radio	38%	30%	29%
Satellite radio	7%	5%	4%
Satellite TV	23%	18%	16%
Newspaper	21%	18%	19%
U.S. Coast Guard Broadcasts	6%	6%	6%
NAVTEX receiver	1%	1%	1%
Immarsat-C SafetyNET	0%	0%	0%
Radiofacsimile	1%	1%	1%
Other	2%	1%	2%
Number of Respondents	14,049	32,532	23,607


Nearly all respondents use NOAA Forecasts, watches, warnings and/or alerts

Observational data used by about half, while almost a quarter use Model output.

	Percent	Frequency
Products use most often		
Forecasts, watches, warnings, alerts	97%	23,556
Observational data	46%	11,128
Model output	22%	5,449
Outreach/educational materials	6%	1,390
Other	4%	988
Not Applicable/Don't know	1%	200
Number of Respondents	24,272	


Fire Weather Watch or Red Flag Warnings are typically used for planning daily activities or recreation purposes

Among those who do use NWS fire weather products and services (44%), only 30% always take action based on issued watches/warnings – about one quarter rarely or never take action.



Decisions from NWS fire weather products and services~	Percentage	Frequency
Planning daily activities	30%	7,181
Recreation	28%	6,793
Determining resource requirements	7%	1,734
Planning operating hours	5%	1,131
Adjusting staffing or planning levels	4%	1,038
Other	4%	901
I don't use NWS fire weather products and services	56%	13,702
Number of Respondents		24,272

Frequency of action from Fire Weather Watch or a Red Flag Warning	Percentage	Frequency
Always	30%	3,262
Usually	24%	2,595
Sometimes	19%	2,004
Rarely	18%	1,953
Never	8%	900
Number of Respondents		10,714



As would be expected, usage is highest in the Western Region (41% don't use).

Future Sources of NWS Info are Computers, Mobile Devices and NOAA Weather Radio

Essentially all respondents anticipate using Desktop/laptop computers to obtain NWS information for the next one to five years. Many indicate they plan on using mobile devices (55%) and/or NOAA Weather Radio All-Hazards (43%), as well.

	2010	2011	2012
Future source NWS info			
Desktop/laptop computer	92%	95%	98%
Mobile Device	57%	59%	55%
Social Media	19%	12%	12%
Direct Interaction with NWS Staff	17%	6%	8%
NOAA Weather Radio All-Hazards	59%	39%	43%
File transfer services	13%	7%	5%
Email Alerts*	--	--	17%
Other	5%	3%	3%
Number of Respondents	14,057	32,572	24,272

* Email Alerts option added 2012

Just under half of respondents have a hazardous weather emergency preparedness kit

Those with a kit typically have had it for more than two years and most often claim “general preparedness” as the reason for its creation; those with no kit usually claim “don’t know what to include” or “isn’t necessary” as the reason for not having one.

	Percent	Frequency
Have hazardous weather emergency preparedness kit		
Have kit	48%	11,639
Do not have kit	52%	12,633
Number of Respondents	24,272	

Length of time with kit		
For more than two years	81%	9,401
For 6 months to 2 years	16%	1,851
For less than 6 months	3%	387
Number of Respondents	11,639	

Reason kit created		
Friends and family	33%	3,807
General desire to be prepared	84%	9,821
An extreme weather event	40%	4,651
Be a Force of Nature campaign	1%	152
Weather-Ready Nation campaign	7%	765
Other public education campaign	5%	585
Other	15%	1,756
Number of Respondents	11,639	

Reason you do not have a kit		
Takes too much time	3%	407
Too expensive	6%	775
Not sure what to include	34%	4,277
Don’t think it’s necessary	36%	4,525
Other	21%	2,649
Number of Respondents	12,633	

Most respondents have a hazardous weather safety plan and have had it for over two years

Consistent with the reason given for creating a hazardous weather emergency preparedness kit, the clear majority created the safety plan for general preparedness purposes – also consistent with those not having a kit, those without a safety plan aren't sure what to include or don't think a plan is necessary.

	Percent	Frequency
Have a hazardous weather safety plan		
Have a plan	60%	14,455
Do not have a plan	40%	9,817
Number of Respondents		24,272

Length of time with plan		
For more than two years	83%	11,981
For 6 months to 2 years	14%	1,970
For less than 6 months	3%	504
Number of Respondents		14,455

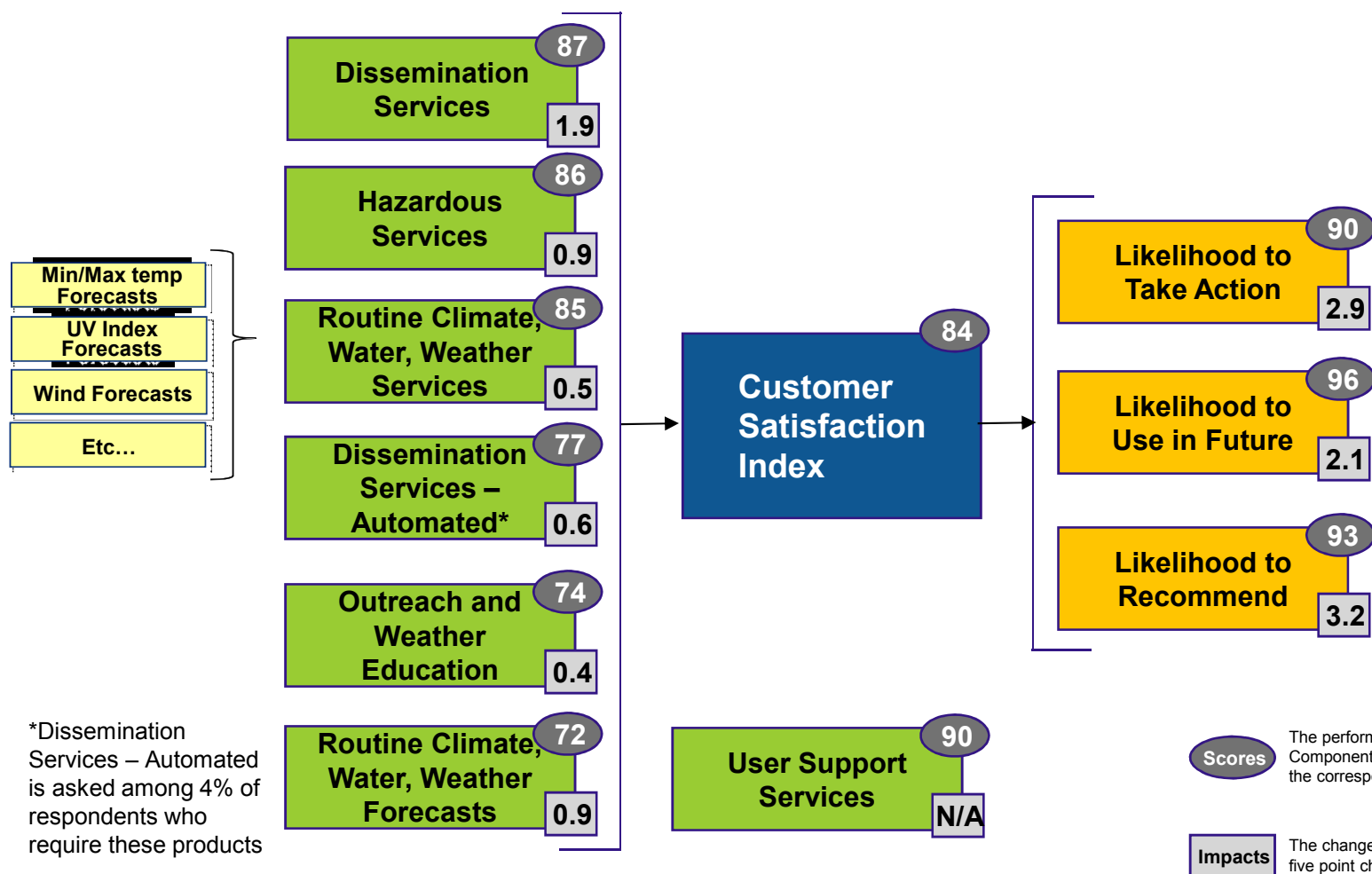
Reason plan created		
Friends and family	42%	6,006
General desire to be prepared	83%	11,933
An extreme weather event	43%	6,197
Be a Force of Nature campaign	1%	164
Weather-Ready Nation campaign	5%	722
Other public education campaign	3%	474
Other	11%	1,611
Number of Respondents		14,455

Reason you do not have a plan		
Takes too much time	2%	230
Too expensive	1%	66
Not sure what to include	36%	3,565
Don't think it's necessary	45%	4,442
Other	15%	1,514
Number of Respondents		9,817

Summary Results

NWS Customer Satisfaction Model

From left to right are the components, Customer Satisfaction Index, and outcome measures (sometimes referred to as desired behaviors). Components are a weighted average of specific questions (attributes) asked on the survey. Components are general areas of customer experience that drive customer satisfaction. Impacts, in the light gray boxes, indicate the degree to which each component drives overall customer satisfaction. Impacts on the right side of the customer satisfaction model represent the degree to which customer satisfaction drives each one of the desired behaviors.



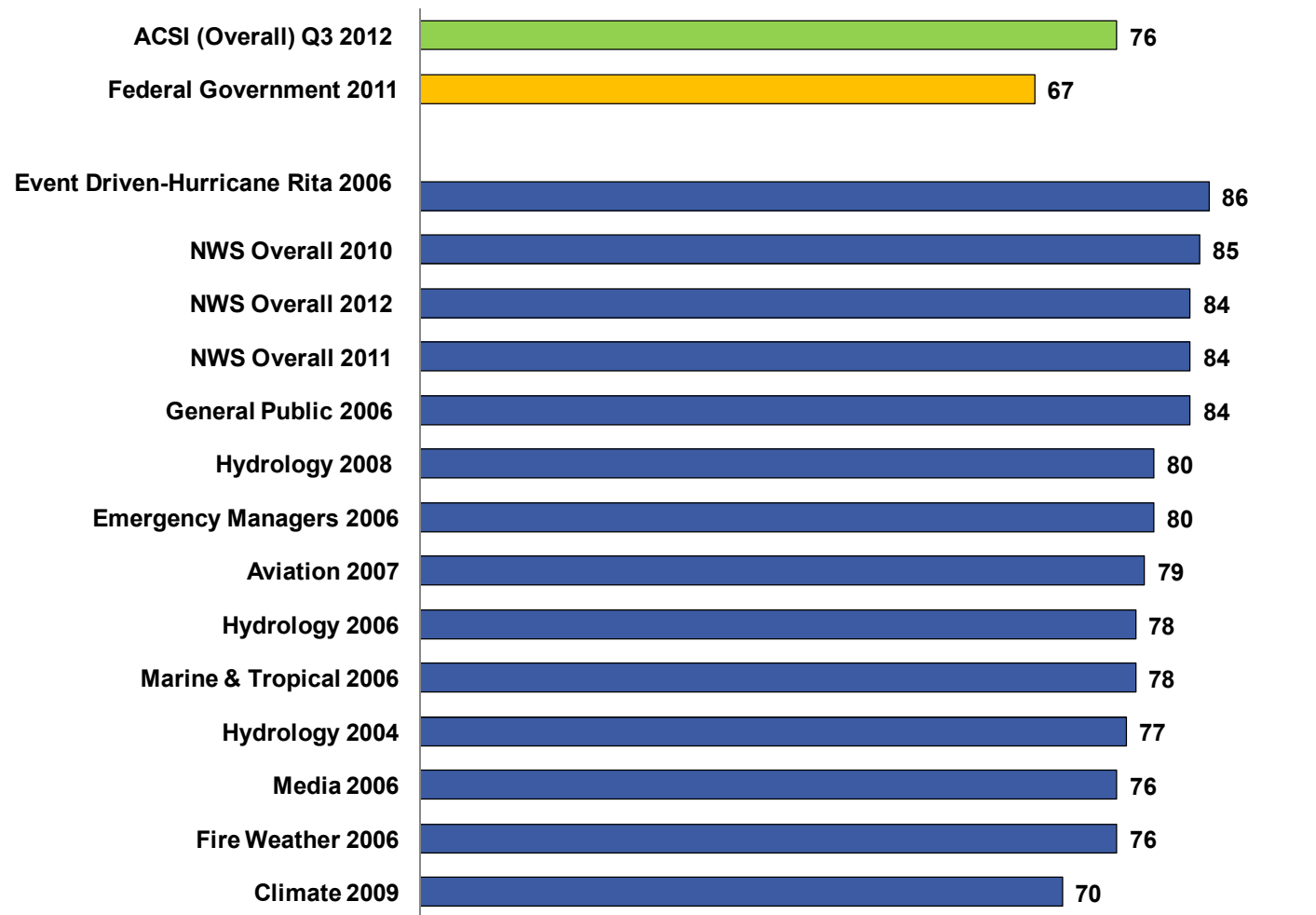
NWS Customer Satisfaction Index

There are three standard questions on every CFI Survey that inquire about overall satisfaction, whether the program meets expectations, and how it compares to your concept of an ideal program – these three questions together create the Customer Satisfaction Index (CSI).

		2011	2012
ATTRIBUTES	Customer Satisfaction Index (CSI)	84	84
	Overall Satisfaction with the National Weather Service	88	88
	How well the National Weather Service meets expectations	80	79
	How the National Weather Service compares to your concept of an “ideal” organization providing weather information	82	82

NWS Overall CSI Score is 17 Points Higher than the Federal Government Average

The chart below provides CSI for previous NWS projects to compare the 2012 overall NWS satisfaction score against. The 2012 overall NWS score is 17 points above the Federal Government ACSI score of 67 and higher than many of the NWS surveys conducted within the past several years.

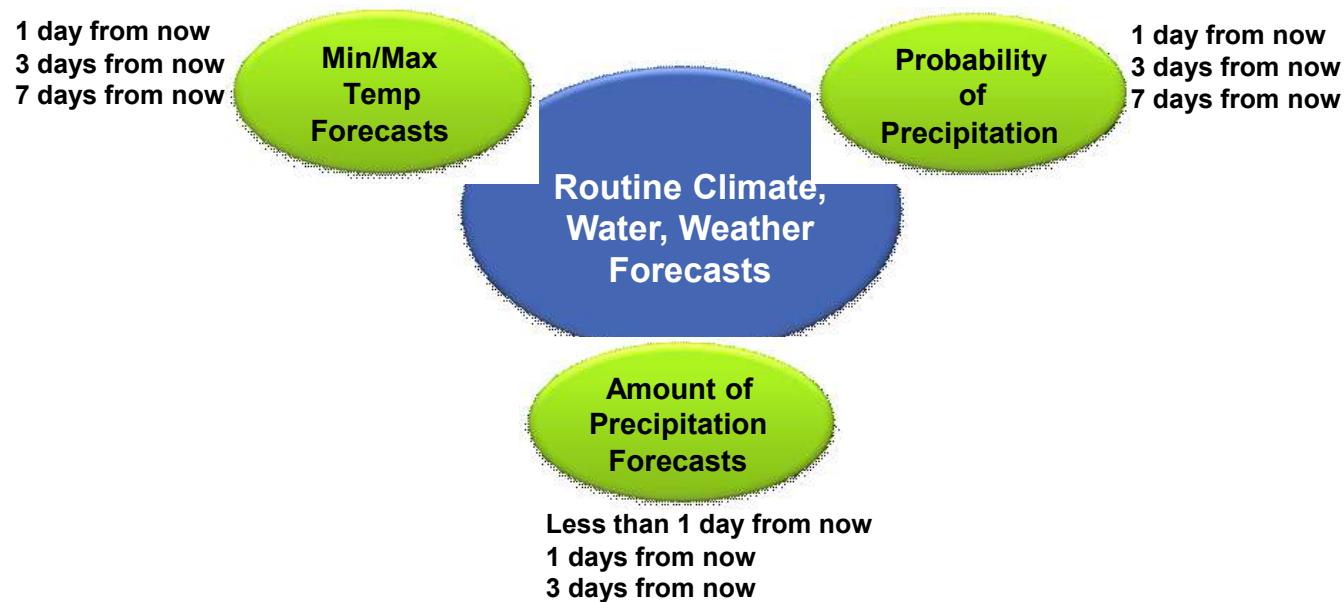


Core Survey Detailed Findings

Routine Climate, Water, Weather Detailed Results

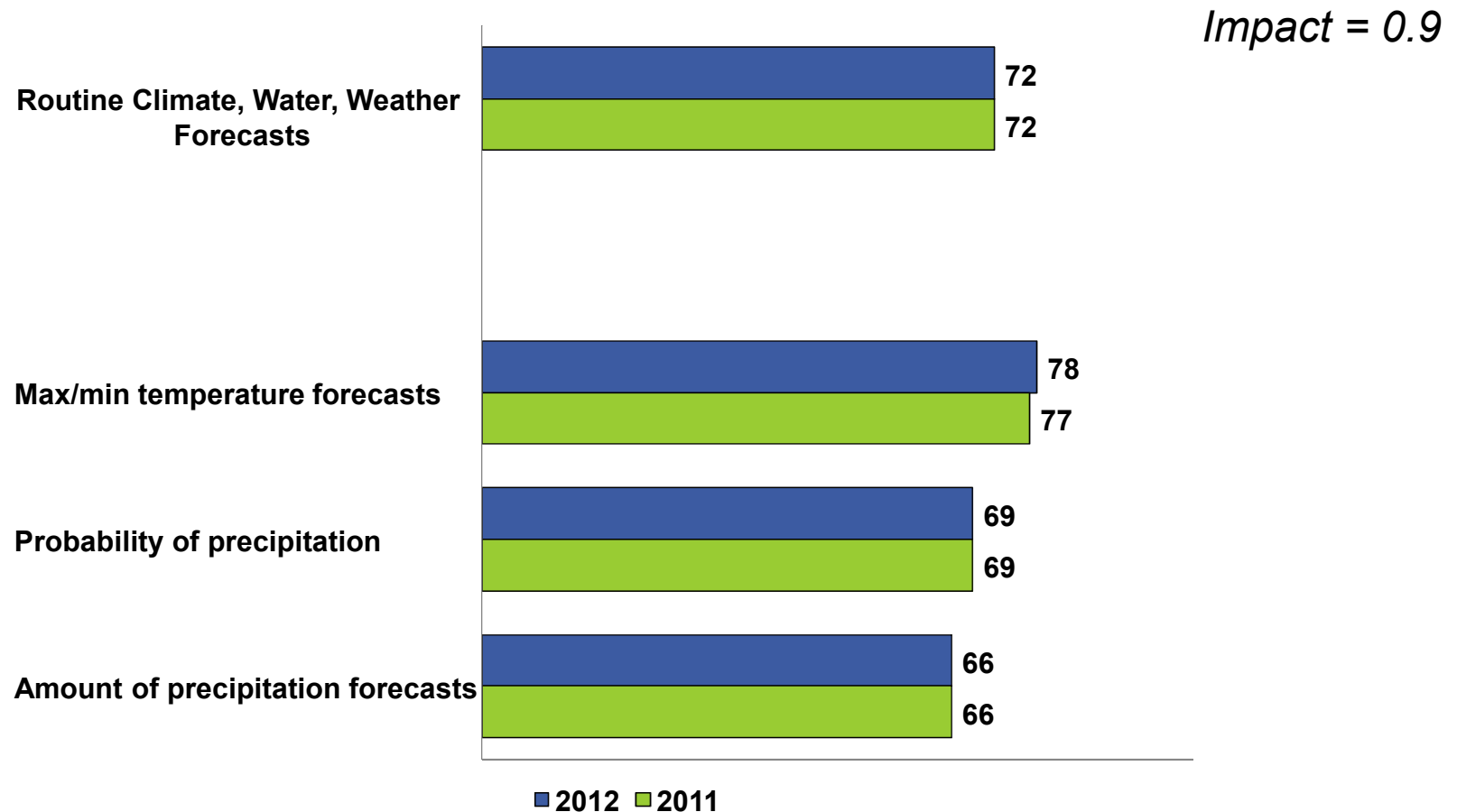
Routine Climate, Water, Weather Forecasts

The Routine Climate, Water, Weather Forecasts component is comprised of three types of forecasts: Min/Max Temperature Forecasts, Probability of Precipitation and Amount of Precipitation. Confidence in Probability of Precipitation and Min/Max Temperature forecasts is measured with three specific questions: confidence in forecasts 1 day from now, 3 days from now and 7 days from now. Confidence in Amount of Precipitation Forecasts is measured with similar questions: confidence in forecasts less than 1 day from now, 1 day from now and 3 days from now.



Respondents continue to show confidence in Max/Min Temperature Forecasts

Within the area of Routine Climate, Water, Weather Forecasts, max/min temperature forecasts again received the higher rating, and improved one point to 78 (returning to 2010 levels). Scores for probability of precipitation and amount of precipitation forecasts remain unchanged since 2010.



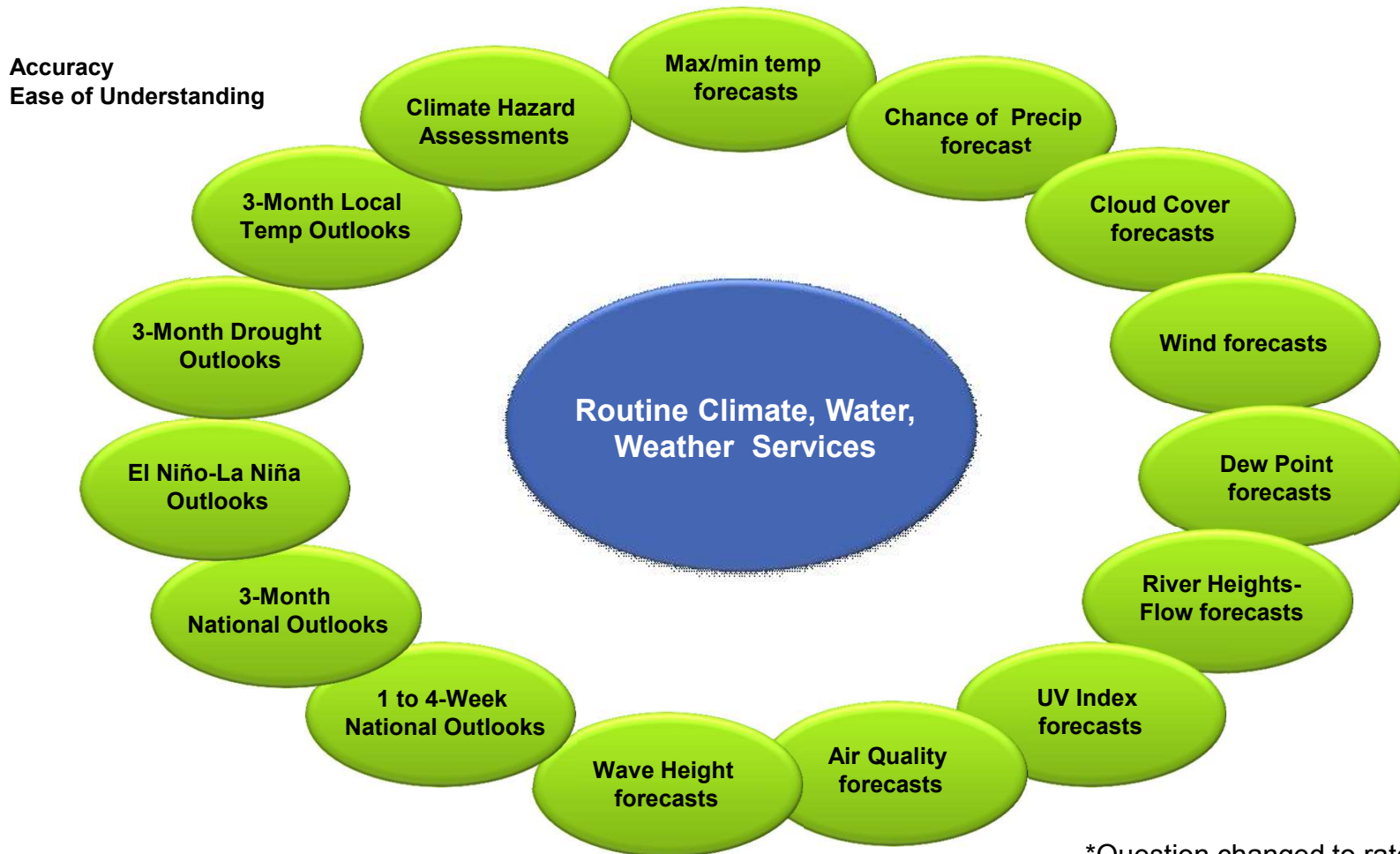
Confidence in Precipitation and Temperature Forecasts drops considerably more than 3 Days Out

Confidence in Max/Min Temperature and Probability of Precipitation forecasts 1 day from now remains high and consistent with results from last year and 2010. Confidence for these two forecasts 3 days from now drops but is still relatively strong – substantial drops are noted for 7 days out (although less so than in previous years). Confidence in Amount of Precipitation forecasts stays strong less than 1 day out and remains fairly high 1 day from now – a substantial drop is observed after 3 days for this forecast.

	2010	2011	2012
Routine Climate Forecasts	72	72	72
Max/min temperature forecasts	77	76	77
1 day from now	90	90	89
3 days from now	75	75	76
7 days from now	54	53	56
Probability of precipitation	67	67	68
1 day from now	83	84	83
3 days from now	65	65	66
7 days from now	44	45	47
Amount of precip forecasts	66	65	65
Less than 1 day from now	80	80	79
1 day from now	65	65	64
3 days from now	47	47	48

Routine Climate, Water, Weather Services

The Routine Climate, Water, Weather Services component is comprised of 15 types of forecasts. Each forecast is measured with two specific questions: ease of understanding and accuracy*.

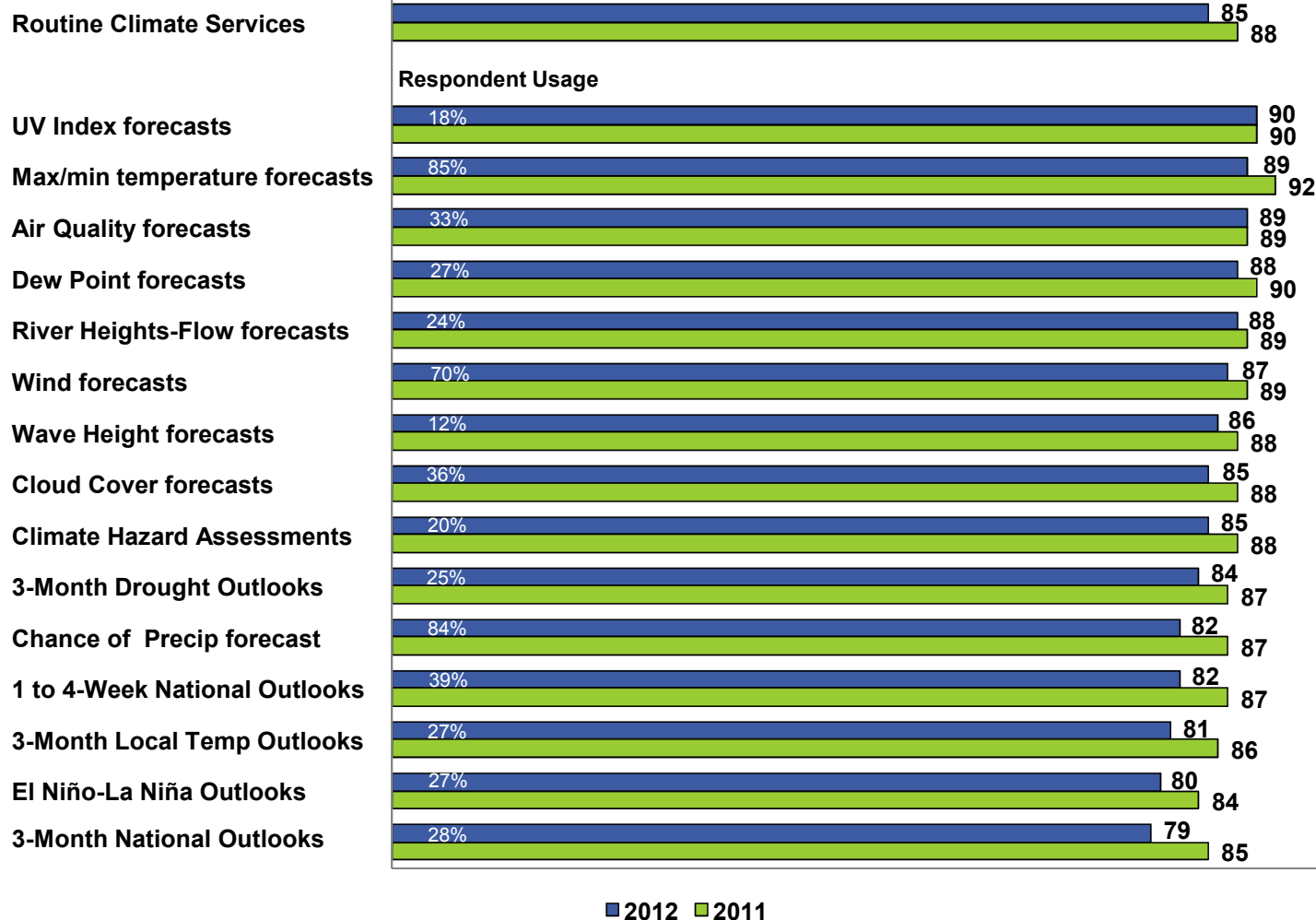


*Question changed to rate accuracy in 2012 from meets my needs previously.

Scores are strong for most Routine Climate Services products

Below are the overall ratings for each forecast type among those who have used the forecast within the past year. The majority of respondents use the Max/Min Temperature Forecasts (85%) and/or Chance of Precipitation forecasts (84%), while less than a quarter use Wave Height Forecasts (12%) or UV Index Forecasts (18%). Scores range from 90 for UV Index to 79 for 3-Month National Outlooks.

Impact = 0.5



Note: 2011 scores are shown but aren't directly comparable with 2012 given the 2011 index is comprised of questions "meets needs" and "ease of understanding," while 2012 replaces "meets needs" with "accuracy."

Not too surprisingly "accuracy" ratings are lower than "meets needs" ratings, resulting in lower 2012 index scores for most routine climate services products.

Consistently strong scores for Ease of Understanding are observed across all Forecasts/Outlooks – Accuracy scores are mixed

Overall, forecast types continue to score extremely well on being easy to understand – El Niño/La Niña Outlooks are the only forecasts that have scores in the lower 80s, as was seen in 2011 and 2010. Accuracy ratings are more varied among forecasts, with several in the mid to upper 80s (UV Index highest at 89) to several in the mid to lower 70s (3-Month National Outlook at 70).

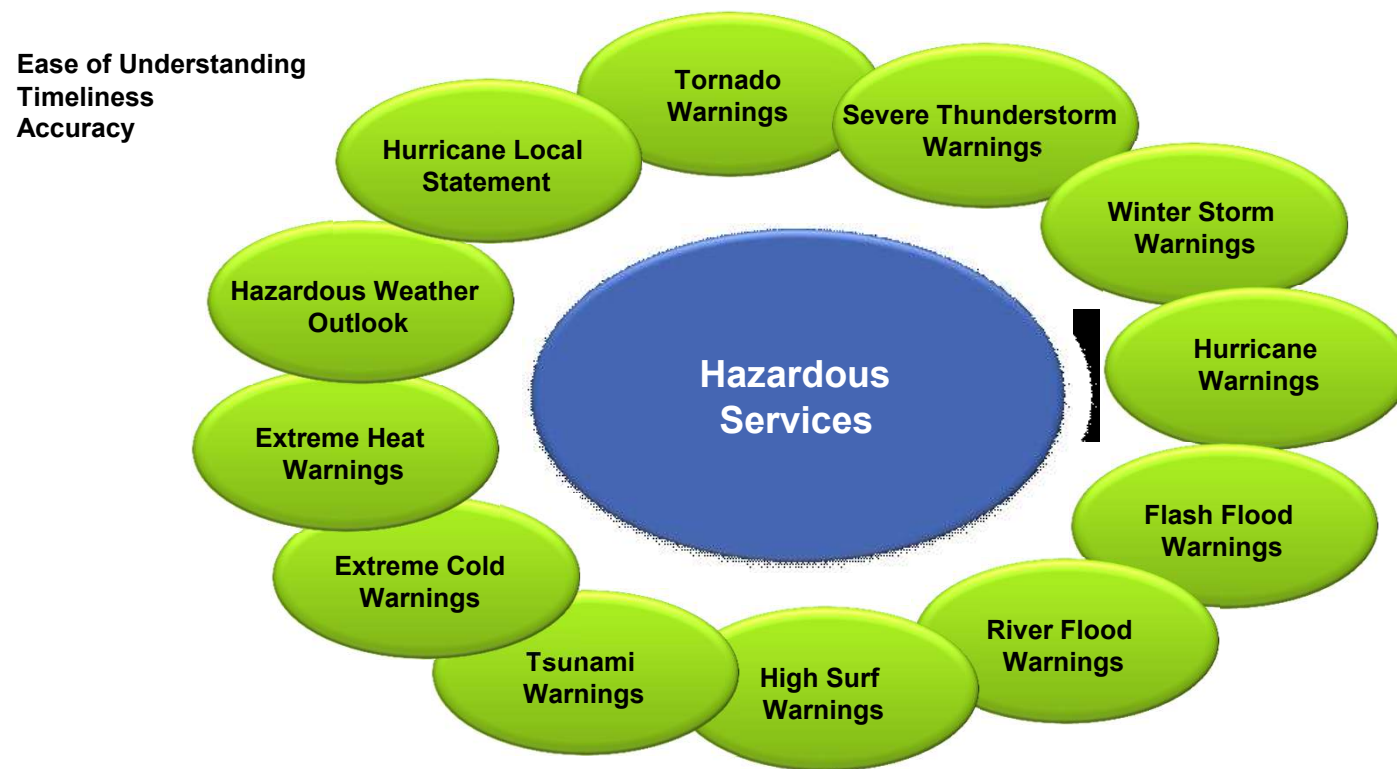
	2010	2011	2012
Routine Climate Services	87	88	85
Max/min temperature forecasts	91	92	90
Ease of Understanding	92	93	93
Accuracy	--	--	85
Chance of Precip forecast	87	87	83
Ease of Understanding	88	89	90
Accuracy	--	--	74
Cloud Cover forecasts	87	88	86
Ease of Understanding	88	89	90
Accuracy	--	--	81
Wind forecasts	89	89	88
Ease of Understanding	90	90	91
Accuracy	--	--	83
Dew Point forecasts	89	90	88
Ease of Understanding	90	90	91
Accuracy	--	--	85
River Heights-Flow forecasts	88	89	88
Ease of Understanding	88	89	90
Accuracy	--	--	86
UV Index forecasts	90	90	91
Ease of Understanding	90	90	91
Accuracy	--	--	89
Air Quality forecasts	88	89	89
Ease of Understanding	88	89	90
Accuracy	--	--	87

	2010	2011	2012
Wave Height forecasts	87	88	87
Ease of Understanding	88	89	90
Accuracy	--	--	82
1 to 4-Week National Outlooks	86	87	83
Ease of Understanding	87	88	88
Accuracy	--	--	74
3-Month National Outlooks	84	85	80
Ease of Understanding	85	86	86
Accuracy	--	--	70
El Niño-La Niña Outlooks	83	84	80
Ease of Understanding	82	84	83
Accuracy	--	--	76
3-Month Drought Outlooks	86	87	84
Ease of Understanding	86	87	88
Accuracy	--	--	79
3-Month Local Temp Outlooks	85	86	82
Ease of Understanding	86	87	87
Accuracy	--	--	73
Climate Hazard Assessments	--	88	86
Ease of Understanding	--	88	88
Accuracy	--	--	82

Hazardous Services Detailed Results

Hazardous Services

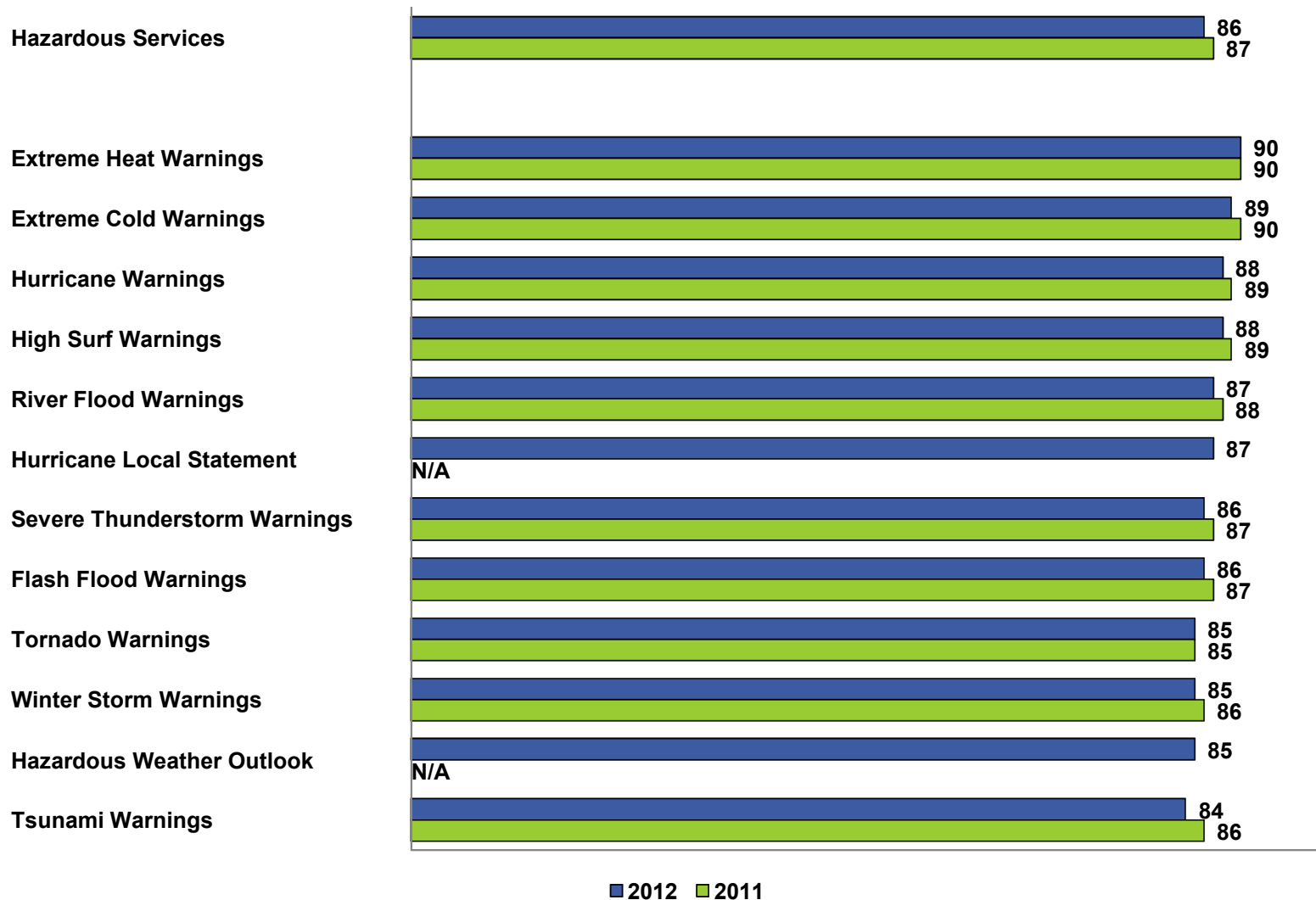
The Hazardous Services component is comprised of 10 types of warnings: Hurricane, High Surf, River Flood, Severe Thunderstorm, Extreme Heat, Extreme Cold, Tsunami, Flash Flood, Tornado and Winter Storm, as well 2 other services: Hurricane Local Statement and Hazardous Weather Outlook. Each warning/service is measured with three specific questions: ease of understanding, timeliness and accuracy.



NWS Hazardous weather Warnings/Services continue to be rated well

Scores for NWS warnings/services score well – a slight drop is observed for most products, however scores continue to range from mid 80s to 90.

Impact = 0.9



NWS warnings/services score well across all regions

Although usage patterns differ from region to region, scores for NWS warnings/services products are generally solid – lowest for the Pacific region, but still in the high 70s to low 80s.

	Central Region		Eastern Region		Southern Region		Western Region		Alaska Region		Pacific Region	
	2012		2012		2012		2012		2012		2012	
	Score	Use	Score	Use	Score	Use	Score	Use	Score	Use	Score	Use
Hazardous Services	86	99%	86	99%	87	99%	86	98%	87	100%	80	100%
Tornado Warnings	85	91%	84	79%	86	90%	85	39%	88*	30%	76	51%
Severe Thunderstorm Warnings	87	98%	86	98%	87	98%	85	79%	89*	30%	79	80%
Winter Storm Warnings	85	96%	85	95%	86	75%	85	87%	87	96%	83	51%
Hurricane Warnings	88	24%	88	68%	89	70%	88	18%	--	13%	81	86%
Flash Flood Warnings	86	73%	85	79%	86	84%	86	59%	89	56%	81	91%
River Flood Warnings	88	57%	87	58%	88	57%	87	57%	87	79%	81	43%
High Surf Warnings	88	10%	88	30%	89	25%	89	33%	89*	17%	82	96%
Tsunami Warnings	84	8%	86	11%	84	11%	86	29%	88	73%	79	93%
Extreme Cold Warnings	90	86%	89	78%	89	64%	88	68%	91	82%	81*	23%
Extreme Heat Warnings	90	90%	90	86%	91	90%	89	80%	--	10%	83*	32%
Hazardous Weather Outlook	85	96%	84	96%	86	96%	85	92%	86	85%	81	83%
Hurricane Local Statement	88	10%	87	45%	88	49%	88	9%	--	6%	81	72%
Sample Size	5,595		4,747		2,899		2,890		71		69	

*Caution: low base

Tornado Warnings continue to receive strong scores

Tornado Warnings score well, with an overall score of 85. Ease of Understanding is highest rated, followed by Timeliness while Accuracy scores lag somewhat.

Tornado Warnings performs well across regions (a bit lower for Pacific). Consistent with overall scores, Ease of Understanding ratings are higher than both Timeliness and Accuracy.

	2010	2011	2012
Tornado Warnings	85	86	85
Ease of Understanding	89	89	89
Timeliness	85	86	85
Accuracy	80	82	81

	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
	2012	2012	2012	2012	2012	2012
Sample Size	5,595	4,747	2,899	2,890	71	69
Tornado Warnings	86	84	86	85	88	76
Ease of Understanding	89	88	89	88	93	82
Timeliness	85	85	86	85	88	75
Accuracy	81	79	82	81	82	73

Half of respondents received a NWS tornado warning and the clear majority are very likely to take cover when issued

Tornado warnings are far more prevalent in the Central, Eastern and Southern regions – regardless of region, most respondents would take cover if a warning was issued. Reasons why respondents would not take action vary; many feel that previous experience leads them to believe their location would not be in danger (or they are in a location where tornadoes are rare).

	Overall	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
Received a NWS tornado warning							
Received warning	52%	64%	58%	69%	5%	0%	3%
Did not receive warning	48%	36%	42%	31%	95%	100%	97%
Number of Respondents	24,272	5,595	4,747	2,899	2,890	71	69

Likelihood to take protective action if tornado warning issued							
Not at all likely	3%	2%	3%	3%	5%	10%	7%
Somewhat likely	22%	21%	27%	22%	16%	18%	16%
Very likely	75%	77%	70%	75%	79%	72%	77%
Number of Respondents	24,272	5,595	4,747	2,899	2,890	71	69

Reason no action would be taken							
I do not believe I would be directly impacted	19%	5%	17%	12%	31%	43%	20%
I normally wait until I see the threatening weather	13%	25%	12%	14%	3%	0%	0%
Previous experiences lead me to believe that my location not in danger	30%	19%	33%	20%	35%	14%	80%
I do not trust the accuracy of tornado warnings	12%	16%	15%	24%	3%	0%	0%
Other	26%	35%	22%	30%	27%	43%	0%
Number of Respondents	800	105	156	74	150	7	5

Note: in many “other” responses respondents say they would not take action due to not living in a tornado zone.

Most respondents think that an actual tornado within 5-10 miles of their location is an accurate warning

About a third of respondents (across regions) feel that their future decision to take cover would be impacted if no tornado occurred following a warning. Still, most feel that the number of warnings issued is “just about right” or that the number of warnings issued is of “no concern” to them.

	Overall	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
Distance to consider accurate warning							
Within 1 mile of my location	7%	6%	6%	7%	5%	4%	3%
Within 5 miles of my location	34%	34%	33%	39%	29%	25%	36%
Within 10 miles of my location	37%	40%	38%	35%	34%	32%	20%
Within 25 miles of my location	23%	19%	23%	18%	32%	38%	41%
Number of Respondents	24,272	5,595	4,747	2,899	2,890	71	69

Warning influence decision if no tornado on prior warning							
Not at all influence	64%	66%	62%	67%	60%	61%	49%
Somewhat influence	26%	25%	28%	23%	29%	31%	29%
Highly influence	10%	10%	10%	10%	11%	8%	22%
Number of Respondents	24,272	5,595	4,747	2,899	2,890	71	69

Opinion about the number of warnings issued for tornados							
Too many tornado warnings issued	7%	9%	7%	9%	1%	0%	0%
Too few tornado warnings issued	3%	3%	3%	4%	3%	1%	4%
Just about the right amount of tornado warnings issued	52%	56%	55%	57%	35%	28%	30%
The number of warnings issued is not a concern to me	38%	32%	35%	30%	61%	70%	65%
Number of Respondents	24,272	5,595	4,747	2,899	2,890	71	69

Severe Thunderstorm Warnings receive strong scores

Severe Thunderstorm Warnings are considered easy to understand and quite timely by respondents, though the level of accuracy is rated somewhat lower (still fairly strong at 83). The same is true across all regions, with ease of understanding and timeliness receiving higher ratings than accuracy.

	2010	2011	2012
Severe Thunderstorm Warnings	86	87	86
Ease of Understanding	90	90	90
Timeliness	86	87	86
Accuracy	83	84	83

	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
	2012	2012	2012	2012	2012	2012
Sample Size	5,595	4,747	2,899	2,890	71	69
Severe Thunderstorm Warnings	87	86	87	85	89	79
Ease of Understanding	90	90	90	88	93	80
Timeliness	87	86	87	85	87	79
Accuracy	83	82	84	81	86	76

Winter Storm Warnings are well received by respondents

Winter Storm Warnings, 85, is also rated higher for the ease of understanding and timeliness than for accuracy.

The same holds true across all regions, with accuracy relatively lower rated.

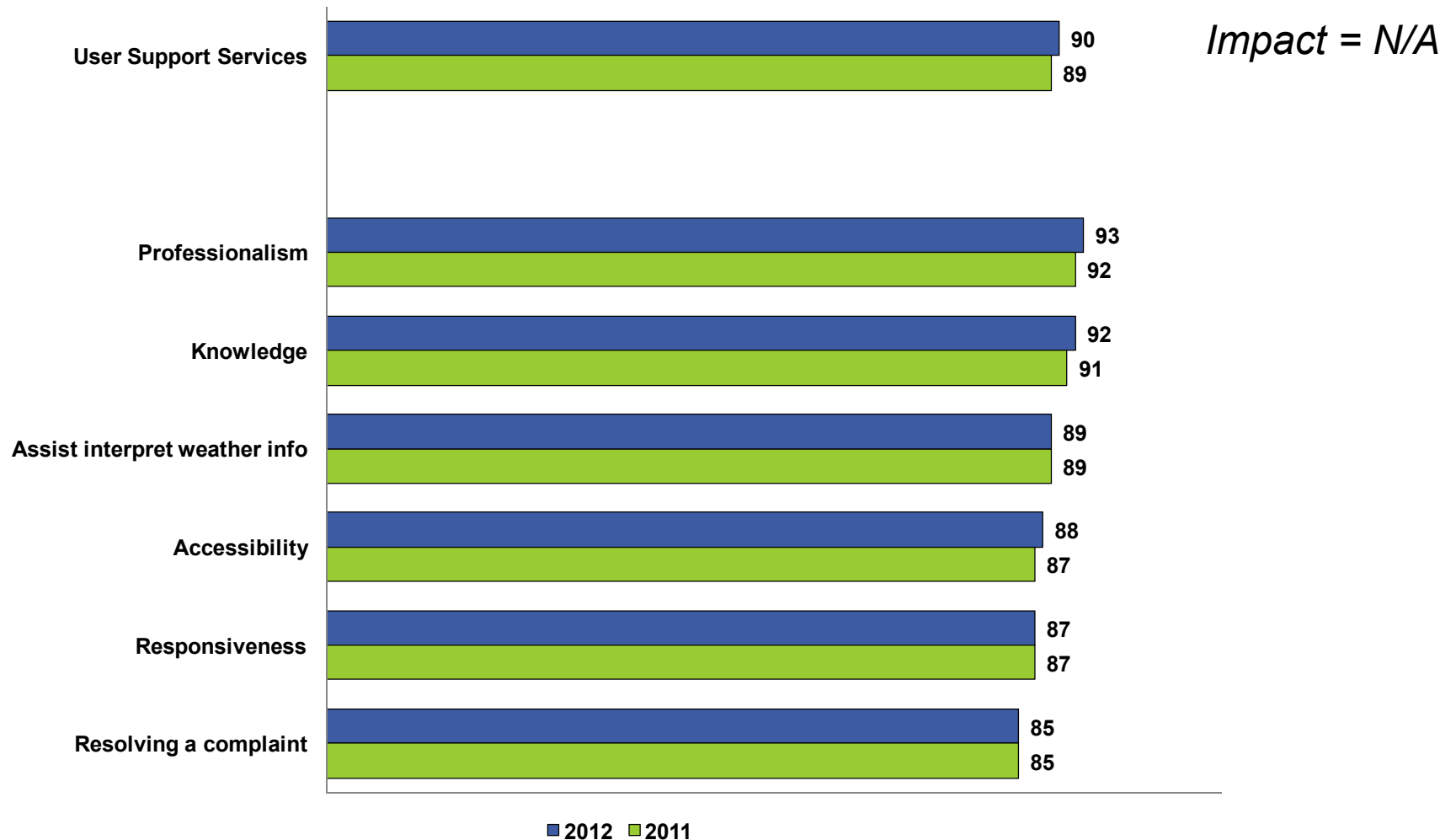
	2010	2011	2012
Winter Storm Warnings	85	86	85
Ease of Understanding	89	89	89
Timeliness	86	87	86
Accuracy	78	80	79

	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
	2012	2012	2012	2012	2012	2012
Sample Size	5,595	4,747	2,899	2,890	71	69
Winter Storm Warnings	85	85	86	85	87	83
Ease of Understanding	89	89	89	89	92	86
Timeliness	86	86	87	86	87	83
Accuracy	78	79	80	80	81	80

User Support Services Detailed Results

Strong, improving scores for User Support Services

Within the area of User Support Services, most areas improve and score extremely well. Professionalism and Knowledge receive outstanding scores, while complaint resolution scores lowest, at 85 (still a strong score). These questions are asked among the 35% of respondents who indicate their job is to make decisions based on weather-related information.



Dissemination Services Detailed Results

Dissemination Services scores improve in 2012 overall

Reliability of satellite data and reliability of radar data improve two points each (to 89 and 88, respectively). In the context of the redesigned weather.gov site, Information is up-to-date and Ease of understanding information remain strong in the upper 80s. Ease of locating information continues to trail other components within Dissemination Services, despite the refresh. Continue to focus improvements for Dissemination Services on this area.

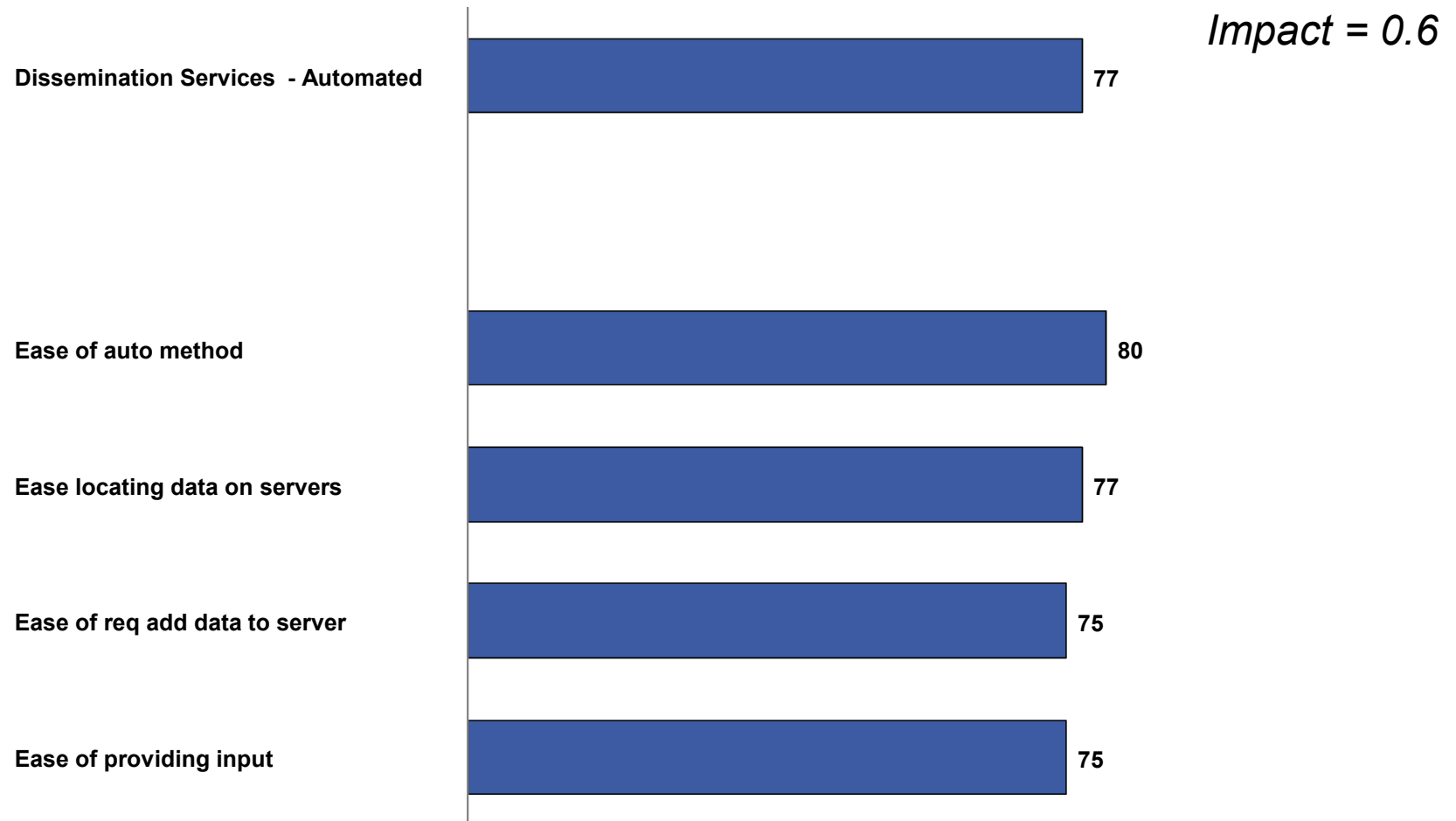


Impact = 1.9

Note: 86% of respondents say that an NWS web page is their primary source of weather information (down slightly from 91% last year).

Dissemination Services – Automated, modest scores with room to improve

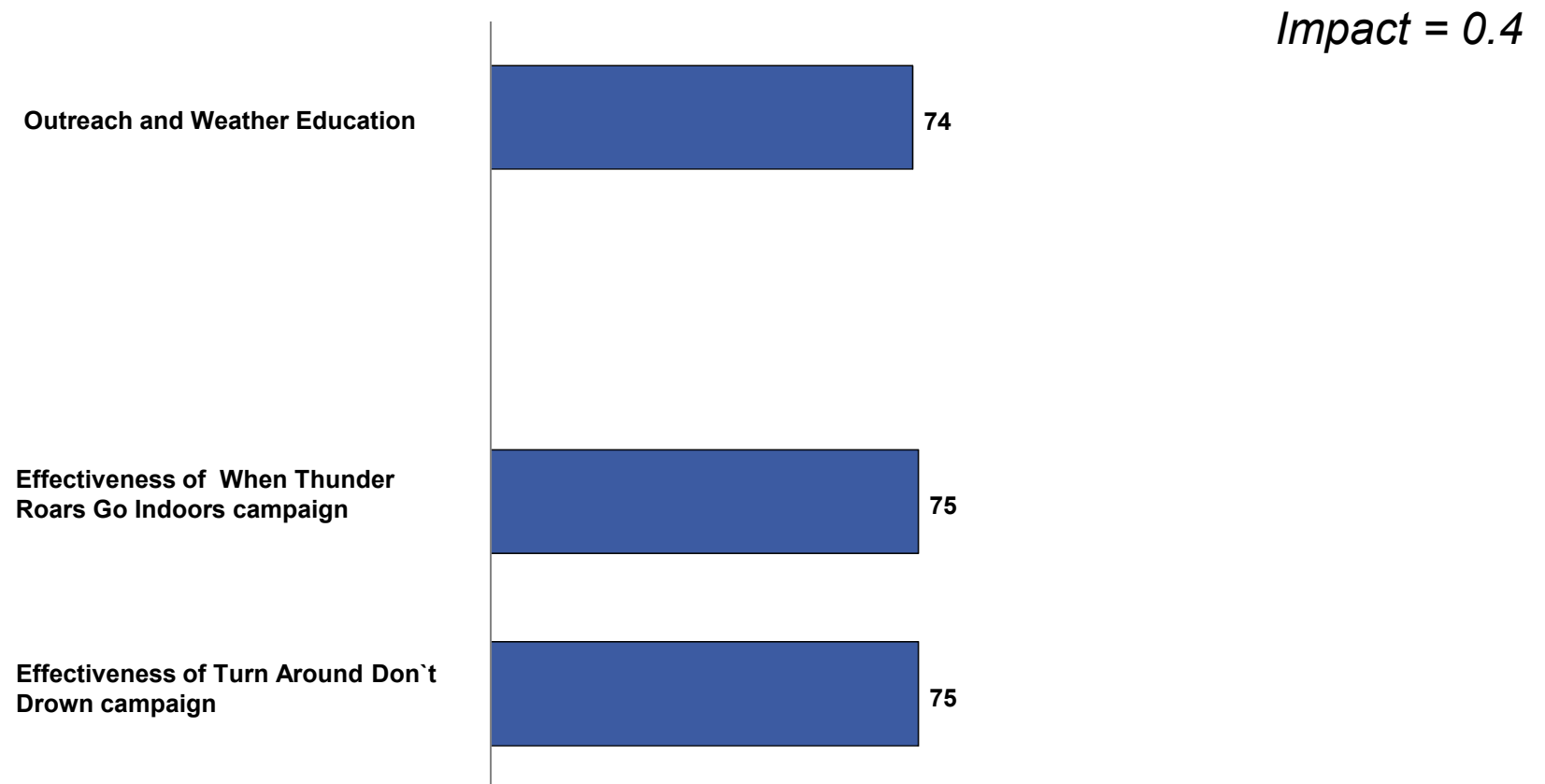
Asked among the 4% of respondents who require automated products for research or commercial purposes, scores for Dissemination Services – Automated ranges largely in the upper 70s, allowing room for some improvement.



Outreach and Weather Education Detailed Results

Outreach and Weather Education – Campaign Effectiveness

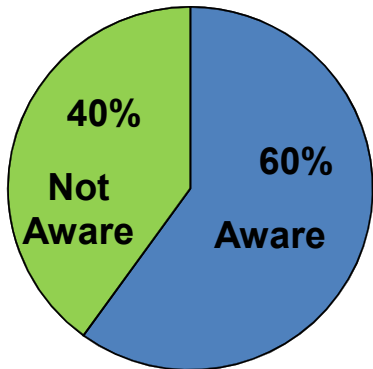
Both “When Thunder Roars” and “Turn Around” are considered effective among respondents aware of the campaigns.



Awareness is much higher for the “Turn Around, Don’t Drown” campaign – effectiveness is similar

Fewer respondents in the Western Region heard about “Turn Around,” while Western, Alaska and Pacific regions report lower awareness of “Thunder” compared to other regions.

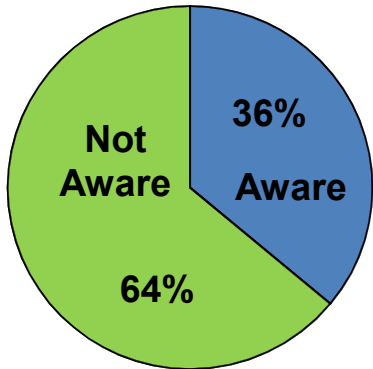
Turn Around Don’t Drown Campaign



N=24,272

63% of respondents have heard of one or both campaigns

When Thunder Roars Campaign



N=24,272

	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
Campaign Awareness						
Aware	63%	59%	75%	39%	52%	67%
Not Aware	37%	41%	25%	61%	48%	33%
Number of Respondents	5,595	4,747	2,899	2,890	71	69

Campaign Effectiveness						
Effectiveness Score	75	75	76	73	77	78

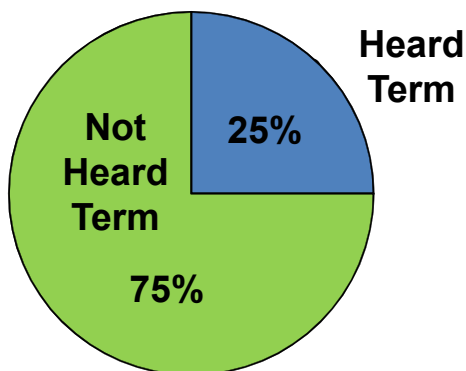
	Central Region	Eastern Region	Southern Region	Western Region	Alaska Region	Pacific Region
Campaign Awareness						
Aware	39%	36%	42%	24%	15%	26%
Not Aware	61%	64%	58%	76%	85%	74%
Number of Respondents	5,595	4,747	2,899	2,890	71	69

Campaign Effectiveness						
Effectiveness Score	74	76	76	74	--	83

Although recall isn't strong for either term, it is considerably higher for "Weather-Ready Nation"

News media is the most recalled source of awareness for either campaign; respondents in the Western region were less likely to have heard about "Weather Ready Nation".

Weather-Ready Nation

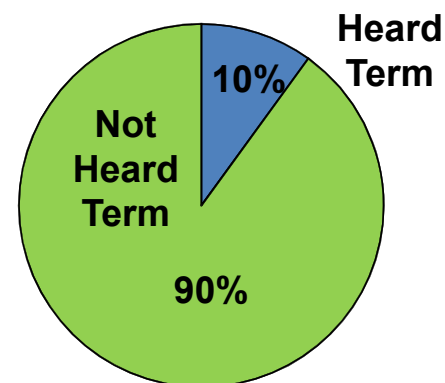


N=24,272

Where heard about Weather-Ready Nation	Percent	Frequency
In the news	46%	2,795
On social media	16%	954
National Weather Service employee	14%	868
At an event	6%	394
Other	18%	1,077
Number of Respondents	6,088	

	Central	Eastern	Southern	Western
Campaign Awareness				
Heard Term	30%	23%	29%	15%
Have Not Heard Term	70%	77%	71%	85%
Number of Respondents	1,698	1,101	849	441

Be a Force of Nature



N=24,272

Where heard about Be a Force of Nature	Percent	Frequency
In the news	48%	1,135
On social media	21%	505
National Weather Service employee	13%	298
At an event	7%	164
Other	12%	276
Number of Respondents	2,378	

	Central	Eastern	Southern	Western
Campaign Awareness				
Heard Term	10%	10%	13%	6%
Have Not Heard Term	90%	90%	87%	94%
Number of Respondents	564	454	377	184

28% of respondents have heard of one or both campaigns

Future Behaviors Detailed Results

Users continue to be very likely to use NWS in the future, take action based on information received and are likely to Recommend NWS

As in the past several years, respondents reported an extremely high likelihood that they would take action based on information received from the NWS, continue to use the NWS as a source of weather information in the future and recommend the NWS to a colleague or friend.

	2010	2011	2012	
Sample Size	14,057	32,572	24,272	
Likelihood take action	Scores	Scores	Scores	Impacts
Likelihood take action on info	92	91	90	2.9
Likelihood use NWS in future	96	96	96	2.1
Likelihood to recommend	94	94	93	3.2

National Hazardous Weather Services – Optional Section Detailed Results

SPC Daily and Severe Weather Rankings

Convective Outlooks and Severe Thunderstorm/Tornado Watches have the highest Rank 1 percentage for daily usage at 54% and 40% respectively. Not surprisingly, on severe weather days, Severe Thunderstorm and Tornado Watches receive highest percent used with a Rank 1 percentage of 50%.

	% Rank 1	Average Rank	% Use
SPC Daily Rank			
Convective Outlooks	54%	2.3	59%
Mesoscale Convective Outlooks and Discussions	5%	3.9	42%
Severe Thunderstorm and Tornado Watches	40%	2.1	77%
Watch Status Messages	9%	3.5	58%
Enhanced Thunderstorm Outlooks	3%	4.0	50%
Public Severe Weather Outlooks	24%	3.1	70%
Storm Reports Webpage	4%	4.8	48%

SPC Severe Weather Rank			
Convective Outlooks	38%	2.8	57%
Mesoscale Convective Outlooks and Discussions	10%	3.7	43%
Severe Thunderstorm and Tornado Watches	50%	1.9	82%
Watch Status Messages	10%	3.3	64%
Enhanced Thunderstorm Outlooks	3%	4.0	53%
Public Severe Weather Outlooks	21%	3.2	72%
Storm Reports Webpage	4%	4.8	51%

SPC Convective Outlook, Mesoscale Convective Outlook, and SPC Product Usefulness Rankings

SPC Convective Outlook Usefulness usage percentage all range in the 60s with Categorical risk info the highest Rank 1 percentage at 57%. The highest Rank 1 percentage for SPC Mesoscale Convective Outlook Usefulness is Watch issuance information at 56%. Graphic, at 65%, is highly ranked at 1 with 72% usage for SPC Watch Product Usefulness.

	% Rank 1	Average Rank	% Use
SPC Convective Outlook Usefulness			
Categorical risk info	57%	1.6	67%
Probabilistic information	32%	1.9	66%
Text discussion	30%	2.1	64%

SPC Mesoscale Convective Outlook Usefulness			
Watch issuance probability info	56%	1.8	57%
Graphical information	35%	2.0	56%
Summary discussion	20%	2.4	53%
Technical discussion	14%	3.0	42%

SPC Watch Product Usefulness			
Graphic	65%	1.5	72%
Text discussion	27%	2.1	67%
Watch probabilities	25%	2.1	69%

Most receive SPC information from Local TV or Radio and Local NWS Forecasts

The SPC Website is another source widely used for information. Contract commercial service has the lowest percentage at 6%. 42% of respondents say they disseminated Severe Thunderstorms/Tornado Watches digitally.

	Percent	Frequency
Receive SPC information		
Local TV or Radio	59%	4,445
State or local government messaging system	17%	1,244
Free commercial service	39%	2,916
Contract commercial service	6%	414
NOAA All-Hazards Weather Radio	50%	3,727
SPC Website	53%	3,982
Local NWS Forecasts	57%	4,245
Digital media	16%	1,167
Other	4%	326
Number of Respondents	7,512	

Disseminate digitally		
Convective Outlooks	15%	1,145
Severe Thunderstorm/Tornado Watches	42%	3,152
Mesoscale Convective Discussions	11%	810
Public Weather Outlooks	23%	1,709
None	52%	3,920
Number of Respondents	7,512	

Most users disseminate products through Email and Text Messaging

Friends and Family are targeted audiences most often, while Aviation Interests and Public transportation officials are the least.

	Percent	Frequency
Digital media channel		
Facebook	38%	1,381
Twitter	13%	480
Text messages	47%	1,676
Email	65%	2,349
Personal website	14%	491
Number of Respondents	3,592	

Target audience		
Friends and family	92%	3,297
Emergency officials	17%	595
Emergency management personnel	13%	458
State and local government	9%	335
Education officials	8%	304
Broadcast/print news media	5%	197
Aviation interests	3%	91
Recreational users	15%	534
Hospitals/Medical facilities	5%	185
Commercial businesses	8%	277
Public transportation officials	3%	113
Other	10%	357
Number of Respondents	3,592	

National Aviation Weather Services – Optional Section Detailed Results

Type of Aviation

Private Aircraft for Pleasure and General Aviation are the most occurring type of aviation used. Dispatcher, Commercial Freight, Commercial Passenger, Private Aircraft for Business make up just 19%.

	Percent	Frequency
Type of aviation		
General Aviation	32%	188
Dispatcher	2%	12
Commercial Freight	2%	10
Commercial Passenger	7%	41
Private Aircraft for Business	8%	44
Private Aircraft for Pleasure	30%	176
Other	19%	112
Number of Respondents	583	


Usage of Aviation Products

A large percentage of respondents utilized Surface Observations, TAFs, Wind-Temp aloft and FAs more than 4 times per month.

	1-2 times per year	3-6 times per year	At least once per month	2-4 times per month	More than 4 times per month	Never
Terminal Aerodrome Forecasts - TAFs	5%	7%	10%	11%	55%	12%
Area Forecasts - FAs	6%	10%	13%	14%	47%	10%
Surface Observations - METARs -SPECIs	3%	5%	10%	9%	65%	8%
Convective Collaborative Forecast Product - CCFP	8%	8%	11%	9%	26%	39%
Significant Meteorological Information - SIGMET	6%	8%	12%	15%	45%	14%
Airmens Meteorological Information - AIRMET	6%	8%	12%	14%	44%	16%
Current Icing Product - CIP-Forecast Icing Product - FIP	11%	18%	10%	11%	24%	26%
Graphical Turbulence Guidance - GTG	12%	8%	11%	10%	26%	33%
Center Weather Advisories - CWAs	9%	9%	13%	11%	30%	28%
Meteorological Impact Statements - MISs	10%	8%	8%	6%	17%	50%
Airport Weather Warning - AWW	10%	10%	9%	7%	22%	40%
Significant Weather Charts - SIGWX	8%	9%	12%	12%	38%	22%
Volcanic Ash Advisories	18%	4%	2%	3%	7%	66%
LAMP	8%	2%	2%	3%	8%	78%
Wind-Temp aloft	5%	7%	11%	13%	52%	13%
Aviation Discussion	9%	5%	10%	9%	35%	32%

Training and information received

Of the 16% who are aware of aviation training offered by NWS, only 14% have utilized the programs. Respondents receive their information mostly from ADDS/Aviation Weather Center Website, FFA's DUAT/DUATS, and FAA's AFSS/FSS sources.



	Percent	Frequency
Aware of any aviation training offered by the NWS		
Aware	16%	96
Unaware	84%	487
Number of Respondents		583


Used any aviation training offered by NWS		
Used	14%	13
Not used	86%	83
Number of Respondents		96

Receive Information		
ADDS/Aviation Weather Center website	72%	420
Commercial vendor	29%	171
FAA's DUAT/DUATS	49%	284
FAA's AFSS/FSS	40%	232
Television	24%	138
WAFS Internet File Service (WIFS)	5%	32
None of the above	11%	64
Number of Respondents		583

National Marine Weather Services – Optional Section Detailed Results

Beach Hazard Statement

Of those who have not heard about the new NWS Beach Hazard Statement, 45% are interested in learning more about it. 86% of respondents feel that a Hazard Statement influences their decision to go to the beach at least somewhat.



	Percent	Frequency
Heard about our new NWS Beach Hazard Statement		
Heard about	29%	265
Did not hear	71%	659
Number of Respondents		924

Interested in learning about NWS Beach Hazard Statement		
Interested in learning	45%	297
Not interested in learning	55%	362
Number of Respondents		659


Gather information about beach hazards prior to going		
Gather prior information	73%	674
Do not gather prior information	27%	250
Number of Respondents		924

Beach Hazard Statement influenced your decision to go		
A lot	46%	427
Some	40%	373
Very little	6%	59
Not at all	7%	65
Number of Respondents		924

Storm Surges

87% of respondents feel NWS should issue storm surge watches and warnings and almost all would like it to apply to tropical and severe extra-tropical storm events. 47% feel information is most useful in a graphical format.

	Percent	Frequency
Experience with storm surges		
I have never have been impacted by one	48%	447
It has damaged my property	8%	73
I or someone I know had to be rescued from one	3%	32
It has caused severe flooding in my area	23%	210
Don't know	7%	67
Other	10%	95
Number of Respondents	924	



NWS should issue storm surge watches and warnings		
NWS should	87%	804
NWS shouldn't	13%	120
Number of Respondents	924	

New warning should apply to tropical and severe extra-tropical storm events		
Apply to both	99%	794
Not apply to both	1%	10
Number of Respondents	804	

Most useful format		
Text	35%	319
Graphical	47%	437
Digital	13%	118
Other	5%	50
Number of Respondents	924	

Other Demographics

Just under half of respondents feel 12-24 hours is adequate time to take action prior to an event.

	Percent	Frequency
Geographical area to be included in a storm surge warning		
NWS Zone	23%	216
County	17%	154
Storm-based polygon (as now used for severe thunderstorms, flash floods, and tornadoes)	55%	510
Other	5%	44
Number of Respondents	924	

Point that negative storm surge affects operations		
-1 to -2 ft	6%	51
-2 to -3 ft	12%	110
-3 to -5 ft	8%	78
> -5 ft	4%	36
Negative storm surge does not affect how I conduct operations.	18%	169
Not applicable	50%	466
Other	2%	14
Number of Respondents	924	

Adequate time period to take action prior to event		
<12 hours	15%	70
12-24 hours	46%	210
24-36 hours	23%	107
36-48 hours	9%	40
2-3 days	4%	19
> 3 days	3%	12
Number of Respondents	458	

44% of respondents ranked rip currents as number one

Rip currents and lightning-severe thunderstorms have the highest percentage of use, while Heat and Ultra violet light are used less frequently.

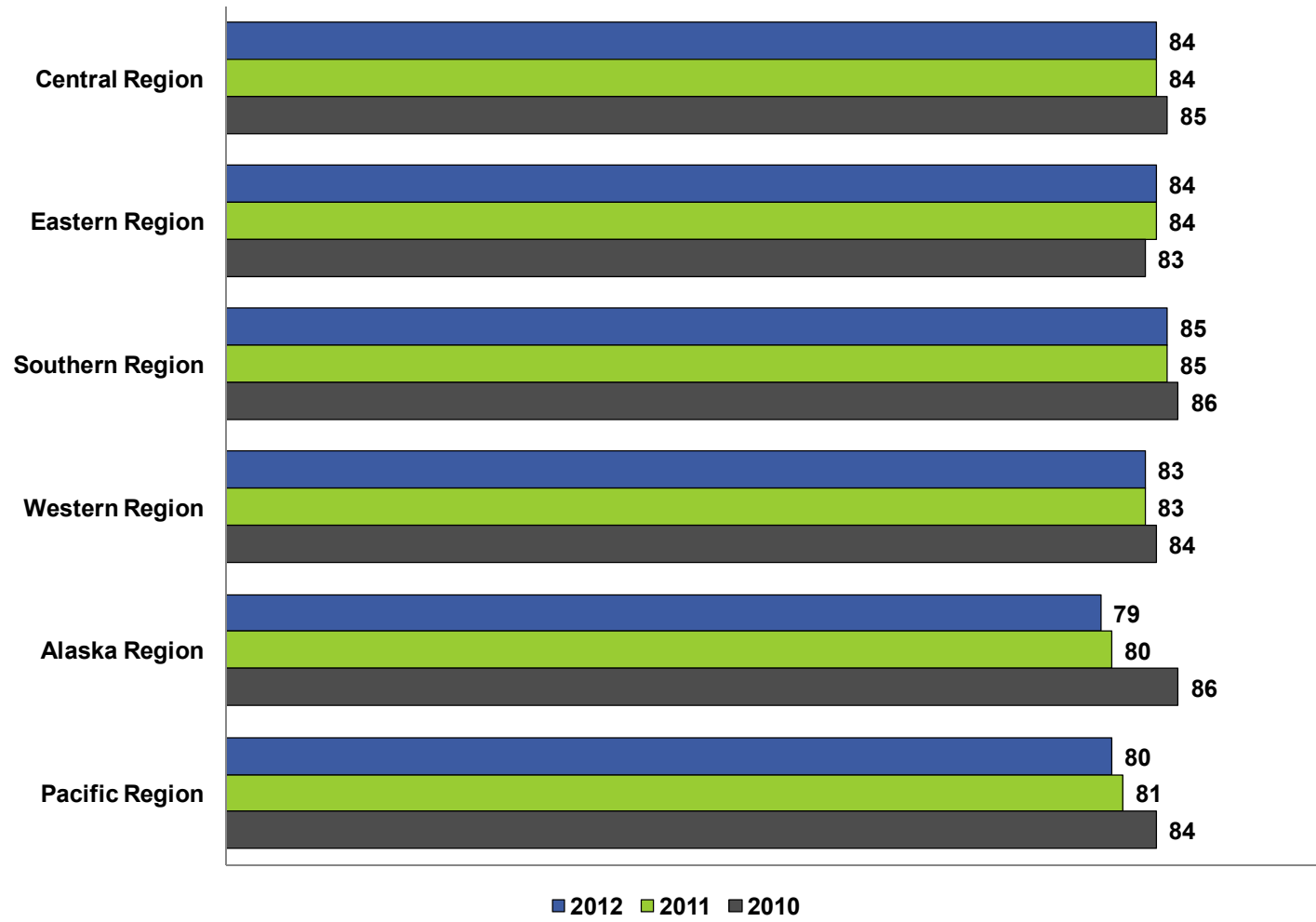
	% Rank 1	Average Rank	% Use
Beach Hazard Rank			
Rip currents	44%	2.1	70%
Other dangerous coastal currents	6%	3.4	47%
Sneaker waves	12%	3.1	44%
Lightning-severe thunderstorms	41%	2.2	72%
Rough surf	21%	2.7	65%
Red tide	11%	3.3	39%
Frigid water temperatures	10%	3.4	20%
Heat	6%	3.5	17%
Ultra violet light	4%	3.7	19%
Other*	27%	2.5	3%

*Caution: low base

CSI by Key Segments

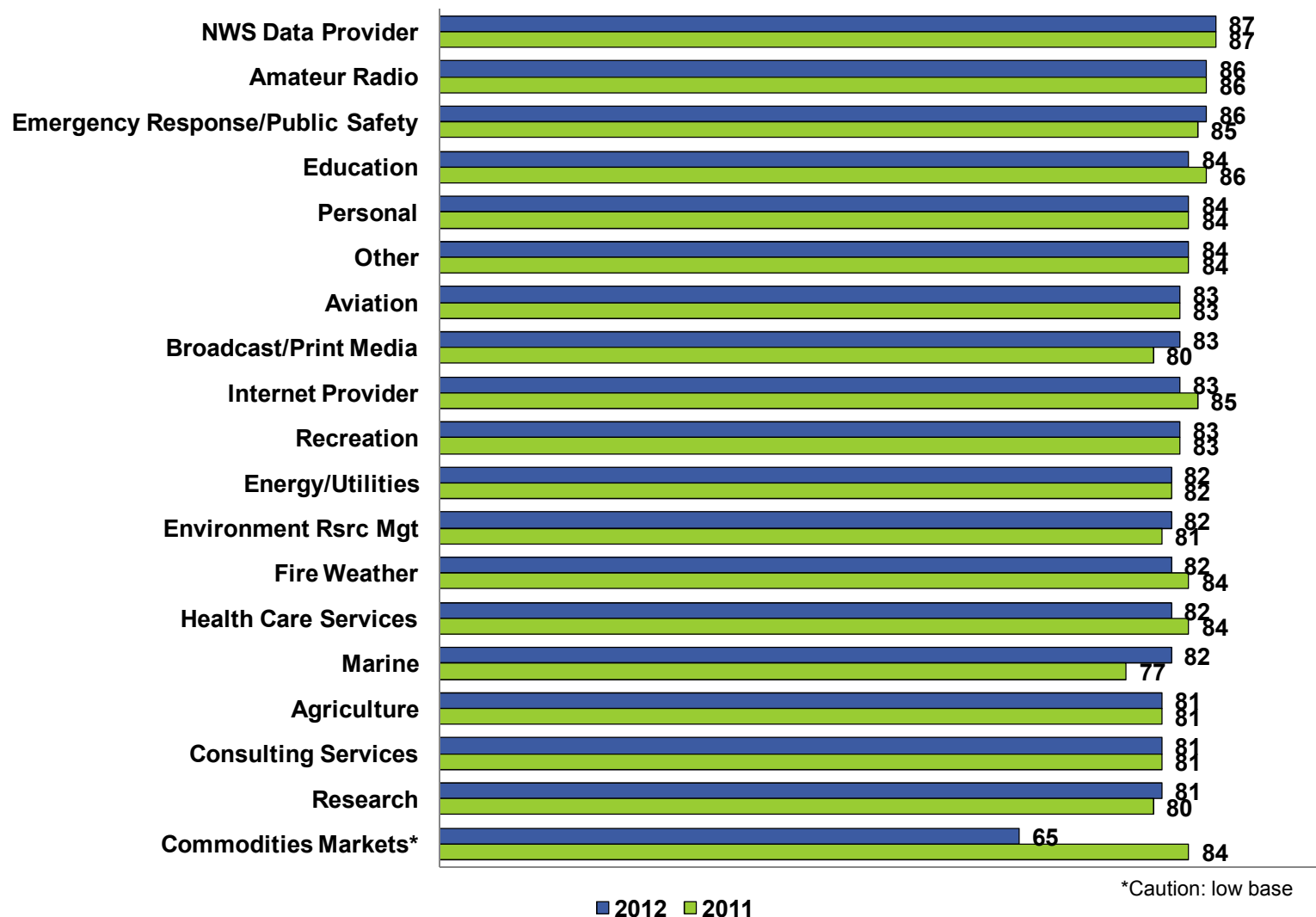
Region Southern Region is Top Scoring

Southern Region is the highest rated, at 85. Alaska and Pacific show year on year declines – other regions unchanged from last year.



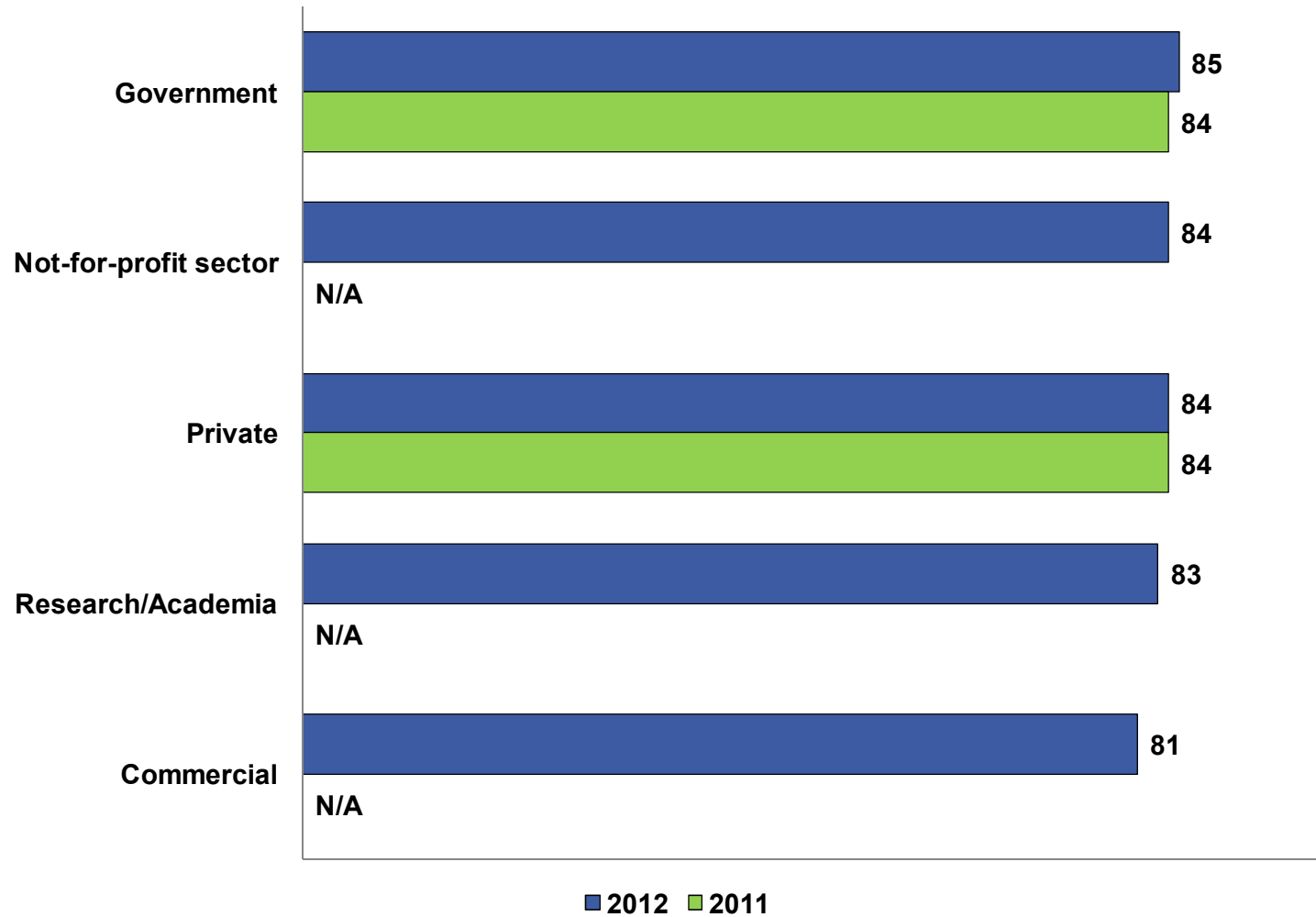
Primary Use of Information NWS Data Providers are most satisfied

Among the primary uses of NWS information, CSI ranges from 81 to 87. NWS data providers remain the highest scoring while Agriculture, Consulting Services, and Research continue to score slightly lower.



CSI by Sector

Government increased 1 point to 85, while the private sector held at 84.



Job decisions on weather info – Demographic Information

The tables below provide demographic information on those who make and do not make job decisions on weather info.

	Central	Eastern	Southern	Western	Alaska	Pacific
Job decisions on weather info						
Makes decisions	35%	32%	38%	31%	49%	39%
Does not make decisions	65%	68%	62%	69%	51%	61%
Number of Respondents	5,595	4,747	2,899	2,890	71	69

	Makes decisions	Does not makes decisions
Sector		
Government	14%	2%
Commercial	11%	2%
Not-for-profit sector	3%	1%
Research/Academia	2%	2%
Private	70%	94%
Primary responsibility		
National	3%	5%
Regional	8%	8%
Single state	9%	9%
Mltpl county/parish...	24%	20%
Large city/urban area	10%	9%
Small city/township...	21%	23%
Rural	14%	19%
Other	12%	7%

	Makes decisions	Does not makes decisions
Information sources		
NWS Web Sources	92%	93%
Non-NWS Web Sources	32%	33%
Mobile devices	42%	35%
Social Media	13%	10%
Email Alerts	23%	12%
NOAA Weather Radio/All Hazards	48%	37%
NOAA Weather Wire	8%	4%
Family of Services (FOS)	5%	3%
Emerg Mgrs Weather Info Net	8%	2%
NOAAPort	6%	4%
File transfer services	7%	4%
Direct interaction with NWS staff	12%	2%
World Area Forecast System	2%	1%
DUATS	3%	2%
Flight Services	7%	3%
Local or cable TV	52%	52%
Commercial Radio	31%	28%
Satellite radio	5%	4%
Satellite TV	18%	15%
Newspaper	17%	20%
U.S. Coast Guard Broadcasts	9%	5%
NAVTEX receiver	1%	0%
Immarsat-C SafetyNET	1%	0%
Radiofacsimile	1%	1%
Other	2%	2%

Recommendations

Recommendations

Dissemination Services continue to have the strongest impact on NWS Customer Satisfaction. Although most areas are rated very well, some room for improvement is available in regards to “ease of locating/finding information” on weather.gov. Consider a review of recent refresh work for further organization of the site.

While most Routine Forecasts are rated well, confidence in longer range forecasts is substantially lower among NWS customers – especially those 7 days out (or 3 for Amount of Precipitation). Consider building context around longer term forecasts to help set appropriate expectations. Including accuracy detail in communications may help in this endeavor.

Hazardous Services products have a relatively strong impact on Customer Satisfaction and also receive higher ratings overall. For specific warnings, there are no issues (overall) with ease of understanding or timeliness, however perceptions of accuracy lag these other measures somewhat which might have an impact on the decision to take action. Using tornado warnings as an example, the vast majority of survey respondents indicate that they would be at least “somewhat likely” to take action when a warning is issued. However, some would not as they do not believe the warning is accurate or suspect they personally won’t be impacted. Continue to educate the public on the severity of warnings and the need to take specific action as suggested.

- Note that awareness of “Weather Ready Nation” and “Be a Force of Nature” is quite low. Improving awareness of these initiatives to should help to further NWS/NOAA efforts to promote readiness and emphasize the need to take action based on issued warnings.



Thank you

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